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Intelligent Transport Systems (ITS);
Testing;
Conformance test specification for
Decentralized Environmental Notification Messages (DENM);
Part 1: Test requirements and Protocol Implementation
Conformance Statement (PICS) proforma

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Contents

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Intelligent Transport System (ITS).

The present document is part 1 of a multi-part deliverable covering Conformance test specification for Decentralized Environmental Notification Messages (DENM) as identified below:

Part 1: "Test requirements and Protocol Implementation Conformance Statement (PICS) proforma";

Part 2: "Test Suite Structure and Test Purposes (TSS&TP)";

Part 3: "Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)".

1 Scope

The present document provides the Protocol Implementation Conformance Statement (PICS) proforma for Conformance test specification for Decentralized Environmental Notification Messages (DENM) as defined in EN 302 637-3 [1] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [3].

The supplier of an implementation which is claimed to conform to EN 302 637-3 [1] is required to complete a copy of the PICS proforma provided in the annex A of the present document.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] ETSI EN 302 637-3 (V1.2.0): "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 3: Specifications of Decentralized Environmental Notification Basic Service".

[2] ISO/IEC 9646-1 (1994): "Information technology -- Open Systems Interconnection - Conformance testing methodology and framework -- Part 1: General concepts".

[3] ISO/IEC 9646-7 (1995): "Information technology -- Open Systems Interconnection - Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 302 637-3 [1], ISO/IEC 9646-1 [2] and ISO/IEC 9646-7 [3] apply.

In particular, the following terms given in ISO/IEC 9646-1 [2] apply:

Implementation Conformance Statement (ICS): statement made by the supplier of an implementation or system claimed to conform to a given specification, stating which capabilities have been implemented.

NOTE: The ICS can take several forms: protocol ICS, profile ICS, profile specific ICS, information object ICS, etc.

ICS proforma: document, in the form of a questionnaire, which when completed for an implementation or system becomes an ICS

Protocol ICS (PICS): PICS for an implementation or system claimed to conform to a given protocol specification

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 637-3 [1] and the following apply:

CAN	Controller Area Network
DE	Data Element
DEN	Decentralized Environmental Notification
DENM	DEN Message
ICS	Implementation Conformance Statement
ITS	Intelligent Transportation Systems
IUT	Implementation Under Test
PICS	Protocol Implementation Conformance Statement
SUT	System Under Test

4 Conformance requirement concerning PICS

If it claims to conform to the present document, the actual PICS proforma to be filled in by a supplier shall be technically equivalent to the text of the PICS proforma given in annex A, and shall preserve the numbering/naming and ordering of the proforma items.

An ICS which conforms to the present document shall be a conforming PICS proforma completed in accordance with the instructions for completion given in clause A.1.

Annex A (normative): DENM PICS Proforma

A.1 Guidance for completing the ICS proforma

A.1.1 Purposes and structure

The purpose of this PICS proforma is to provide a mechanism whereby a supplier of an implementation of the requirements defined in EN 302 637-3 [1] may provide information about the implementation in a standardized manner.

The PICS proforma is subdivided into clauses for the following categories of information:

- guidance for completing the ICS proforma;
- identification of the implementation;
- identification of the EN 302 637-3 [1];
- global statement of conformance;
- PICS proforma tables.

A.1.2 Abbreviations and conventions

The ICS proforma contained in this annex is comprised of information in tabular form in accordance with the guidelines presented in ISO/IEC 9646-7 [3].

Item column

The item column contains a number which identifies the item in the table.

Item description column

The item description column describes in free text each respective item (e.g. parameters, timers, etc.). It implicitly means "is <item description> supported by the implementation?".

Status column

The following notations, defined in ISO/IEC 9646-7 [3], are used for the status column:

m	mandatory - the capability is required to be supported.
o	optional - the capability may be supported or not.
n/a	not applicable - in the given context, it is impossible to use the capability.
x	prohibited (excluded) - there is a requirement not to use this capability in the given context.
o.i	qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.
ci	conditional - the requirement on the capability ("m", "o", "x" or "n/a") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table.
i	irrelevant (out-of-scope) - capability outside the scope of the reference specification. No answer is requested from the supplier.

NOTE 1: This use of "i" status is not to be confused with the suffix "i" to the "o" and "c" statuses above.

Reference column

The reference column makes reference to EN 302 637-3 [1], except where explicitly stated otherwise.

Support column

The support column shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [3], are used for the support column:

Y or y	supported by the implementation.
N or n	not supported by the implementation.
N/A, n/a or -	no answer required (allowed only if the status is n/a, directly or after evaluation of a conditional status).

NOTE 2: As stated in ISO/IEC 9646-7 [3], support for a received PDU requires the ability to parse all valid parameters of that PDU. Supporting a PDU while having no ability to parse a valid parameter is non-conformant. Support for a parameter on a PDU means that the semantics of that parameter are supported.

Values allowed column

The values allowed column contains the type, the list, the range, or the length of values allowed. The following notations are used:

- range of values: <min value> .. <max value>
  example: 5 .. 20

- list of values: <value1>, <value2>, ..., <valueN>
  example: 2 ,4 ,6 ,8, 9
  example: '1101'B, '1011'B, '1111'B
  example: '0A'H, '34'H, '2F'H

- list of named values: <name1>(<val1>), <name2>(<val2>), ..., <nameN>(<valN>)
  example: reject(1), accept(2)

- length: size (<min size> .. <max size>)
  example: size (1 .. 8)

Values supported column

The values supported column shall be filled in by the supplier of the implementation. In this column, the values or the ranges of values supported by the implementation shall be indicated.

References to items

For each possible item answer (answer in the support column) within the ICS proforma a unique reference exists, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item number in the table. If there is more than one support column in a table, the columns are discriminated by letters (a, b, etc.), respectively.

EXAMPLE 1: A.5/4 is the reference to the answer of item 4 in table 5 of annex A.

EXAMPLE 2: A.6/3b is the reference to the second answer (i.e. in the second support column) of item 3 in table 6 of annex A.

Prerequisite line

A prerequisite line takes the form: Prerequisite: <predicate>.

A prerequisite line after a clause or table title indicates that the whole clause or the whole table is not required to be completed if the predicate is FALSE.

A.1.3 Instructions for completing the ICS proforma

The supplier of the implementation shall complete the ICS proforma in each of the spaces provided. In particular, an explicit answer shall be entered, in each of the support or supported column boxes provided, using the notation described in clause A.1.2.

If necessary, the supplier may provide additional comments in space at the bottom of the tables or separately.

More detailed instructions are given at the beginning of the different clauses of the ICS proforma.

A.2 Identification of the implementation

Identification of the Implementation Under Test (IUT) and the system in which it resides (the System Under Test (SUT)) should be filled in so as to provide as much detail as possible regarding version numbers and configuration options.

The product supplier information and client information should both be filled in if they are different.

A person who can answer queries regarding information supplied in the ICS should be named as the contact person.

A.2.1 Date of the statement

.....

A.2.2 Implementation Under Test (IUT) identification

IUT name:

.....

.....

IUT version:

.....

A.2.3 System Under Test (SUT) identification

SUT name:

.....

.....

Hardware configuration:

.....

.....

.....

Operating system:

.....

A.2.4 Product supplier

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

A.2.5 Client (if different from product supplier)

Name:

.....

Address:

.....

.....

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

A.2.6 ICS contact person

(A person to contact if there are any queries concerning the content of the ICS)

Name:

.....

Telephone number:

.....

Facsimile number:

.....

E-mail address:

.....

Additional information:

.....

.....

.....

A.3 Identification of the protocol

This ICS proforma applies to the following standard:

EN 302 637-3 [1]: "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 3: Specifications of Decentralized Environmental Notification Basic Service".

A.4 Global statement of conformance

Are all mandatory capabilities implemented? (Yes/No) .....

NOTE: Answering "No" to this question indicates non-conformance to the DENM standard specification. Non-supported mandatory capabilities are to be identified in the ICS, with an explanation of why the implementation is non-conforming, on pages attached to the ICS proforma.

A.5 Tables

A.5.1 ITS Station role

The supplier of the implementation shall state the support of role of the implementation according to the following station type, in table A.1.

Table A.1: Station role

Item	Type	Reference	Status	Support
1	originator ITS-S	4.1	m	
2	receiver ITS-S	4.1	m	
3	forwarder ITS-S	4.1	o	

A.5.1.1 Functions

The supplier of the implementation shall state the support of the implementation for each of the following function, in table A.2.

Table A.2: Functions

Item	Type	Reference	Status	Support
1	Encode DENM:	5.2	c201	
2	Decode DENM	5.2	c202	
3	DENM transmission management	5.2	c203	
4	DENM reception management	5.2	c204	
5	DENM Keep Alive Forwarding (KAF):	5.2	c205	
c201 if A.1/1 or A.1/3 then m else n/a c202 if A.1/2 or A.1/3 then m else n/a c203 if A.1/1 or A.1/3 then m else n/a c204 if A.1/2 or A.1/3 then m else n/a c205 if A.1/3 then m else n/a				

A.5.2 DEN Causes

The supplier of the implementation shall state the support of the implementation for each of the following direct causes, in table A.3.

Table A.3: Cause and sub cause codes supported

Item	Direct cause	Cause code	Sub code	Sub cause	Ref.	Status	Support
1	1	Traffic Congestion	0	Unavailable	Table 8	m	
2			1	Increased volume of traffic	Table 8	m	
3			2	Traffic jam slowly increasing	Table 8	m	
4			3	Traffic jam increasing	Table 8	m	
5			4	Traffic jam strongly increasing	Table 8	m	
6			5	Traffic stationary	Table 8	m	
7			6	Traffic jam slightly decreasing	Table 8	m	
8			7	Traffic jam decreasing	Table 8	m	
9			8	Traffic jam strongly decreasing	Table 8	m	
10	2	Accident	0	Unavailable	Table 8	m	
11			1	Multi-vehicle accident	Table 8	m	
12			2	Heavy accident	Table 8	m	
13			3	Accident involving lorry	Table 8	m	
14			4	Accident involving bus	Table 8	m	
15			5	Accident involving hazardous materials	Table 8	m	
16			6	Accident on opposite lane	Table 8	m	
17			7	Unsecured accident	Table 8	m	
18			8	Assistance requested (e-call)	Table 8	m	
19	3	Roadwork	0	Unavailable	Table 8	m	
20			1	major roadwork	Table 8	m	
21			2	Road marking work	Table 8	m	
22			3	Slow moving road maintenance	Table 8	m	
23			4	Winter service	Table 8	m	
24			5	Street cleaning	Table 8	m	
25	6	Adverse weather condition - adhesion	0	Unavailable	Table 8	m	
26			1	Heavy frost on road	Table 8	m	
27			2	Fuel on road	Table 8	m	
28			3	Mud on road	Table 8	m	
29			4	Snow on road	Table 8	m	
30			5	Ice on road	Table 8	m	
31			6	Black ice on road	Table 8	m	
32			7	Oil on road	Table 8	m	
33			8	Loose chippings	Table 8	m	
34			9	Instant black ice	Table 8	m	
35			10	Roads salted	Table 8	m	
36	9	Hazardous location - Surface condition	0	Unavailable	Table 8	m	
37			1	Rock falls	Table 8	m	
38			2	Earthquake damage	Table 8	m	
39			3	Sewer collapse	Table 8	m	
40			4	Subsidence	Table 8	m	
41			5	Snow drifts	Table 8	m	
42			6	Storm damage	Table 8	m	
43			7	Burst pipe	Table 8	m	
44			8	Volcano eruption	Table 8	m	
45			9	Falling ice	Table 8	m	
46	10	Hazardous location - Obstacle on the road	0	Unavailable	Table 8	m	
47			1	Shed load	Table 8	m	
48			2	Parts of vehicles	Table 8	m	
49			3	Parts of tyres	Table 8	m	
50			4	Big objects	Table 8	m	
51			5	Fallen trees	Table 8	m	
52			6	Hub caps	Table 8	m	
53			7	Waiting vehicles	Table 8	m	
54	11	Hazardous location - Animal on the road	0	Unavailable	Table 8	m	
55			1	Wild animals	Table 8	m	
56			2	Herd of animals	Table 8	m	

Item	Direct cause	Cause code	Sub code	Sub cause	Ref.	Status	Support
57			3	Small animals	Table 8	m	
58			4	Large animals	Table 8	m	
59	12	Human presence on the road	0	Unavailable	Table 8	m	
60			1	Children on roadway	Table 8	m	
61			2	Cyclists on roadway	Table 8	m	
62			3	Motor cyclist on roadway	Table 8	m	
63	14	Wrong way driving	0	Unavailable	Table 8	m	
64			1	Vehicle driving in wrong lane	Table 8	m	
65			2	Vehicle driving in wrong driving direction	Table 8	m	
66	15	Rescue and Recovery	0	Unavailable	Table 8	m	
67			1	Emergency vehicles	Table 8	m	
68			2	Rescue helicopter landing	Table 8	m	
69			3	Police activity ongoing	Table 8	m	
70			4	Medical emergency ongoing	Table 8	m	
71			5	Child abduction in progress	Table 8	m	
72	17	Adverse weather condition - extreme weather condition	0	Unavailable	Table 8	m	
73			1	Strong winds	Table 8	m	
74			2	Damaging hail	Table 8	m	
75			3	Hurricane	Table 8	m	
76			4	Thunderstorm	Table 8	m	
77			5	Tornado	Table 8	m	
78			6	Blizzard	Table 8	m	
79	18	Adverse weather condition - visibility	0	Unavailable	Table 8	m	
80			1	Visibility reduced due to fog	Table 8	m	
81			2	Visibility reduced due to smoke	Table 8	m	
82			3	Visibility reduced due to heavy snowfall	Table 8	m	
83			4	Visibility reduced due to heavy rain	Table 8	m	
84			5	Visibility reduced due to heavy hail	Table 8	m	
85			6	Visibility reduced due to low sun glare	Table 8	m	
86			7	Visibility reduced due to sandstorms	Table 8	m	
87			8	Visibility reduced due to swarms of insects	Table 8	m	
88	19	Adverse weather condition -Precipitation	0	Unavailable	Table 8	m	
89			1	Heavy rain	Table 8	m	
90			2	Heavy snowfall	Table 8	m	
91			3	Soft hail	Table 8	m	
92	26	Slow vehicle	0	Unavailable	Table 8	m	
93			1	Slow moving maintenance vehicle	Table 8	m	
94			2	Vehicles slowing to look at accident	Table 8	m	
95			3	Abnormal load	Table 8	m	
96			4	Abnormal wide load	Table 8	m	
97			5	Convoy	Table 8	m	
98			6	Snowplough	Table 8	m	
99			7	De-icing.	Table 8	m	
100			8	Salting vehicles	Table 8	m	
101	27	Dangerous end of queue	0	Unavailable	Table 8	m	
102			1	Sudden end of queue	Table 8	m	
103			2	Queue over hill	Table 8	m	
104			3	Queue around bend	Table 8	m	
105			4	Queue in tunnel	Table 8	m	
106	91	Vehicle breakdown	0	Unavailable	Table 8	m	
107			1	Lack of fuel	Table 8	m	
108			2	Lack of battery	Table 8	m	
108			3	Engine problem	Table 8	m	
110			4	Transmission problem	Table 8	m	
111			5	Engine cooling problem	Table 8	m	
112			6	Braking system problem	Table 8	m	
113			7	Steering problem	Table 8	m	
114			8	Tyre puncture	Table 8	m	
115	92	Post crash	0	Unavailable	Table 8	m	
116			1	Accident without e-Call triggered	Table 8	m	
117			2	Accident with e-Call manually triggered	Table 8	m	

Item	Direct cause	Cause code	Sub code	Sub cause	Ref.	Status	Support
118			3	Accident with e-Call automatically triggered	Table 8	m	
119			4	Accident with e-Call triggered without a possible access to a cell network.	Table 8	m	
120	93	Human problem	0	Unavailable	Table 8	m	
121			1	Glycaemia problem	Table 8	m	
122			2	Heart problem	Table 8	m	
123	94	Stationary vehicle	0	Unavailable	Table 8	m	
124			1	Human Problem	Table 8	m	
125			2	Vehicle breakdown	Table 8	m	
126			3	Post crash	Table 8	m	
127			4	Public transport stop	Table 8	m	
128			5	Carrying dangerous goods	Table 8	m	
129	95	Emergency vehicle approaching	0	Unavailable	Table 8	m	
130			1	Emergency vehicle approaching	Table 8	m	
131			2	Prioritized vehicle approaching	Table 8	m	
132	96	Hazardous location indication - Dangerous Curve	0	Unavailable	Table 8	m	
133			1	Dangerous left turn curve	Table 8	m	
134			2	Dangerous right turn curve	Table 8	m	
135			3	Multiple curves starting with unknown turning direction	Table 8	m	
136			4	Multiple curves starting with left turn	Table 8	m	
137			5	Multiple curves starting with right turn	Table 8	m	
138	97	Collision risk	0	Unavailable	Table 8	m	
139			1	Longitudinal collision risk	Table 8	m	
140			2	Crossing collision risk	Table 8	m	
141			3	lateral collision risk	Table 8	m	
142			4	Collision risk involving vulnerable road user	Table 8	m	
143	98	Signal violation	0	Unavailable	Table 8	m	
144			1	Stop sign violation	Table 8	m	
145			2	Traffic light violation	Table 8	m	
146			3	Turning regulation violation	Table 8	m	
147	99	Dangerous situation	0	Unavailable	Table 8	m	
148			1	Emergency electronic brake lights	Table 8	m	
149			2	Pre-crash system activated	Table 8	m	
150			3	ESP(Electronic Stability Program) activated	Table 8	m	
151			4	ABS (Anti-lock braking system) activated	Table 8	m	
152			5	AEB (Automatic Emergency Braking) activated	Table 8	m	
153			6	Brake warning activated	Table 8	m	
154			7	Collision risk warning activated	Table 8	m	

A.5.3 DENM Message

Table A.4: Fields of DENM message supported

Item	Name of field	Ref.	Status	Support
1	ITS Pdu Header	Annex B - B.1	m	
2	denm	Annex B - B.2	m	

A.5.3.1 ItsPduHeader element

Table A.5: Fields of ItsPduHeader element supported

Prerequisite: A.4/1				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	protocolVersion	Annex B - B.1	m	
2	messageID	Annex B - B.1	m	
3	stationID	Annex B - B.1	m	

A.5.3.2 DecentralizedEnvironmentalNotificationMessage element

Table A.6: Fields of DecentralizedEnvironmentalNotificationMessage supported

Prerequisite: A.4/2					
Item	**Name of field**	**Ref.**	**Status**	**Name of element**	**Support**
1	management	Annex B - B.3	m	ManagementContainer	
2	situation	Annex B - B.4	o	SituationContainer	
3	location	Annex B - B.5	o	LocationContainer	
4	alacarte	Annex B - B.6	o	AlacarteContainer	

A.5.3.2.1 ManagementContainer element

Table A.7: Fields of ManagementContainer element supported

Prerequisite: A.6/1				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	actionID	Annex B - B.7	m	
2	detectionTime	Annex B - B.10	m	
3	referenceTime	Annex B - B.39	m	
4	isNegation	Annex B - B.24	m	
5	isCancellation	Annex B - B.25	m	
6	eventPosition	Annex B - B.13	m	
7	relevanceDistance	Annex B - B.40	m	
8	relevanceTrafficDirection	Annex B - B.41	m	
9	validityDuration	Annex B - B.55	m	
10	transmissionInterval	Annex B - B.53	o	

A.5.3.2.1.1 ManagementContainer sub-elements

Table A.8: ActionID

Prerequisite: A.7/2				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	originatorStationID	Annex B - B.30	m	
2	sequenceNumber	Annex B - B.46	m	

A.5.3.2.2 SituationContainer element

Table A.9: Fields of SituationContainer element supported

Prerequisite: A.6/2				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	informationQuality	Annex B - B.23	m	
2	eventType	Annex B - B.16	m	
3	linkedCause	Annex B - B.28	o	

A.5.3.2.2.1 SituationContainer sub-elements

Table A.10: CauseCode

Prerequisite: A.9/2 or A.9/3				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	Cause	Table 8	m	
2	subCause	Table 8	m	

A.5.3.2.3 LocationContainer element

Table A.11: Fields of LocationContainer element supported

Prerequisite: A.6/3				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	eventSpeed	Annex B - B.15	o	
2	eventPositionHeading	Annex B - B.14	o	
3	Traces	Annex B - B.52	m	
4	roadClass	Annex B - B.44	o	

A.5.3.2.4 AlacarteContainer element

Table A.12: Fields of AlacarteContainer element supported

Prerequisite: A.6/4				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	laneNumber	Annex B - B.26	o	
2	impactReduction	Annex B - B.21	o	
3	externalTemperature	Annex B - B.17	o	
4	roadWorks	Annex B - B.45	o	
5	positioningSolution	Annex B - B.33	o	
6	stationaryVehicle	Annex B - B.50	o	

A.5.3.2.4.1 AlacarteContainer sub element

Table A.13: ImpactReductionContainer

Prerequisite: A.12/2				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	heightLonCarrLeft	Annex B - B.19	m	
2	heightLonCarrRight	Annex B - B.20	m	
3	posLonCarrLeft	Annex B - B.36	m	
4	posLonCarrRight	Annex B - B.37	m	
5	positionOfPillars	Annex B - B.35	m	
6	posCentMass	Annex B - B.31	m	
7	wheelBaseVehicle	Annex B - B.58	m	
8	turningRadius	Annex B - B.54	m	
9	posFrontAx	Annex B - B.32	m	
10	positionOfOccupants	Annex B - B.34	m	
11	vehicleMass	Annex B – B.57	m	
12	requestResponseIndication	Annex B – B.42	m	

Table A.14: RoadWorksContainer

Prerequisite: A.12/4				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	lightBarSirenInUse	Annex B - B.27	m	
2	closedLanes	Annex B - B.9	m	
3	restriction	Annex B - B.43	m	
4	speedLimit	Annex B - B.47	m	
5	incidentIndication	Annex B - B.22	m	
6	recommendedPath	Annex B - B.38	m	

Table A.15: StationaryVehicleContainer

Prerequisite: A.12/6				
Item	**Name of field**	**Ref.**	**Status**	**Support**
1	stationType	Annex B - B.51	m	
2	stationarySince	Annex B - B.49	m	
3	stationaryCause	Annex B - B.48	m	
4	carryingDangerousGoods	Annex B - B.8	m	
5	numberOfOccupants	Annex B - B.29	m	
6	vehicleIdentification	Annex B - B.56	m	
7	energyStorageType	Annex B - B.12	m	

A.5.4 Protocol parameters

A.5.4.1 Timing requirements

The supplier of the implementation shall provide information about the timing requirements.

Table A.16: Timing requirements

Item	**Name**	**Ref.**	**Status**	**Support**
1	default validity time of DENM generations (600 s)	8.1.1.4, 8.2.1.4, 8.3.1.4	m	

Annex B (informative): Bibliography

ETSI TS 102 637-2 (V1.2.1): "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 2: Specification of Cooperative Awareness Basic Service".

ETSI TS 102 637-4: "Intelligent Transport Systems (ITS); Vehicular Communications; Basic set of applications; Part 4: Operational Requirements".

ETSI TS 102 868-1: "Intelligent Transport Systems (ITS); Testing; Conformance test specification for Co-operative Awareness Messages (CAM); Part 1: Test requirements and Protocol Implementation Conformance Statement (PICS) proforma".

ETSI ETS 300 406 (1995): "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

History

Document history		
V1.1.1	March 2011	Publication
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